States, there will be an east-west chain of five stations stretching about 1200 km across the western states, with a shorter north-south cross-chain of three stations.

There are clear connections between cosmic rays and solar activity and the earth's magnetic field and magnetic storms. Cosmic rays represent a powerful tool with which to investigate magnetic phenomena many thousands of miles from the earth. Studies of cosmic rays require simultaneous measurements widely made over the earth, including polar regions as well as temperate and equatorial zones; they also require parallel studies of solar activity, geomagnetism, aurora, and ionospheric physics.

New techniques permit direct measurement of the upper atmosphere by means of large, ground-launched rockets with an altitude range of about 200 miles. In addition, smaller rockets, launched from balloons and aircraft, will be used during IGY for measurements of atmospheric parameters up to approximately 60 miles. U. S. rocket studies will be coordinated with those of other nations, particularly at crucial times of unusual solar activity. Rockets will measure atmospheric pressure, temperature, and density; the earth's magnetic field, especially during auroral displays; night and day airglow; solar and ultraviolet lights and x-rays; auroral particles; ozone distribution; ionospheric charge densities; and cosmic radiation.

The U. S. scientists will make observations at three stations for two IGY programs in the field of positional astronomy: the determination of astronomical longitudes and latitudes and the photographic determination of the position of the moon.

The IGY provides the opportunity for seismological observations and measurements in remote areas. Seismic soundings will be used for measurement of the depth of ice in Antarctica and mapping of the buried rock surfaces. Geophysicists will study the earth's deeper structure, locations of earthquake rifts or zones of instability in the Antarctic continent, and various types of microseisms and their relation to meteorological conditions. This work will be coordinated with that of an international network for study of the earth's crust and of the deep interior. Seismic exploration in the beds of the Atlantic and Pacific Oceans will be continued and expanded.

The United States plans activities in the Arctic, Sub-Arctic, middle latitudes of the Northern and Southern Hemispheres (including the United States, Central America, South America, and adjacent parts of the Atlantic and Pacific Oceans), Equatorial Pacific, and Antarctic and Sub-Antarctic regions. During last winter the USS Atka surveyed the ice conditions in the Antarctic seas and coastal sites for a base. This fall another mission will install the Little America Station, at or near Little America, and carry supplies and equipment for inland stations. In addition to conducting studies in meteorology, ionospheric physics, aurora and airglow, gravity, geomagnetism, and cosmic rays, IGY scientists in Antarctica will undertake several transcontinental traverses to make glaciological and seismological observations to determine the extent of the ice and land masses.